

What is claimed is:

- 1 1. A heat sink for dissipating thermal energy from an electronic device, the
2 heat sink comprising:
3 a base adapted to be thermally coupled to the electronic device; and
4 a fin thermally coupled to the base, the fin including a first portion made
5 from a first material and a second portion made from a second material, wherein one
6 edge of the first portion and an opposing edge of the second portion form at least
7 one of a lap joint and a butt joint between the first portion and the second portion.
- 1 2. The heat sink of claim 1 wherein the first portion is coupled to the base and
2 the second portion is coupled to the first portion.
- 1 3. The heat sink of claim 1 wherein the first portion is a sheet of the first
2 material and the second portion is a sheet of the second material.
- 1 4. The heat sink of claim 3 wherein the sheet of the first material and the sheet
2 of the second material are in substantially the same plane.
- 1 5. The heat sink of claim 1 wherein the one edge of the first portion and the
2 opposing edge of the second portion form a butt joint between the first portion and
3 the second portion.
- 1 6. The heat sink of claim 1 wherein the one edge of the first portion and the
2 opposing edge of the second portion form a lap joint between the first portion and
3 the second portion.
- 1 7. The heat sink of claim 1 wherein the first material has a higher thermal
2 conductivity than the second material, and the second material has a lower density
3 than the first material.

- 1 8. The heat sink of claim 1 further comprising at least one additional fin
2 extending from the base.
- 1 9. The heat sink of claim 1 wherein the fin includes a reinforcing member that
2 supports the at least one of a lap joint and a butt joint.
- 1 10. The heat sink of claim 1 wherein the first portion and the second portion are
2 coupled together by resistance spot welding to form at least one of a lap joint and a
3 butt joint between the first portion and the second portion.
- 1 11. A heat sink for dissipating thermal energy from an electronic device, the
2 heat sink comprising:
3 a copper base adapted to be thermally coupled to the electronic device; and
4 a fin thermally coupled to the base, the fin comprising a copper portion and an
5 aluminum portion such that the copper portion of the fin conducts thermal energy
6 away from the copper base to the aluminum portion of the fin, wherein one edge of
7 the copper portion and an opposing edge of the aluminum portion form at least one
8 of a lap joint and a butt joint between the copper portion and the aluminum portion.
- 1 12. The heat sink of claim 11 wherein the copper portion and the aluminum
2 portion are coupled together by brazing.
- 1 13. The heat sink of claim 12 wherein the one edge of the copper portion and the
2 opposing edge of the aluminum portion are coupled together to form a lap joint
3 between the copper portion and the aluminum portion.

- 1 14. A method comprising:
2 constructing a fin by joining one edge of a first portion made from a first
3 material to an opposing edge of a second portion made from a second material to
4 form at least one of a butt joint and a lap joint between the first portion and the
5 second portion;
6 thermally coupling the fin to a base to form a heat sink; and
7 thermally coupling the heat sink to an integrated circuit such that the heat
8 sink conducts thermal energy away from the integrated circuit during operation of
9 the integrated circuit.
- 1 15. The method of claim 14 wherein thermally coupling the fin to the base to
2 form the heat sink includes coupling the more thermally conductive of the first and
3 second portions to the base.
- 1 16. The method of claim 14 wherein constructing a fin by joining a first portion
2 to a second portion includes friction welding the first portion to the second portion.
- 1 17. The method of claim 14 wherein constructing a fin by joining one edge of a
2 first portion made from a first material to an opposing edge of a second portion
3 made from a second material includes orientating a sheet of the first material in
4 substantially the same plane as another sheet of the second material.
- 1 18. The method of claim 14 wherein constructing a fin by joining one edge of a
2 first portion made from a first material to an opposing edge of a second portion
3 made from a second material includes joining a copper portion to an aluminum
4 portion.
- 1 19. The method of claim 18 wherein thermally coupling the fin to the base to
2 form the heat sink includes thermally coupling the copper portion of the fin to the
3 base.

1 20. A computer system comprising:
2 an integrated circuit board;
3 a processor coupled to the integrated circuit board; and
4 a heat sink thermally coupled to the processor, the heat sink comprising a
5 base to transfer heat away from the processor, and a fin thermally coupled to the
6 base, the fin including a first portion made from a first material and a second portion
7 made from a second material, wherein one edge of the first portion and an opposing
8 edge of the second portion form at least one of a lap joint and a butt joint between
9 the first portion and the second portion.

1 21. The computer system of claim 20 wherein at least one of the first and second
2 portions of the fin conducts thermal energy away from the base.

1 22. The computer system of claim 20 wherein the first material is copper, the
2 second material is aluminum, and the base is copper.

1 23. The computer system of claim 20 wherein the one edge of the first portion
2 and the opposing edge of the second portion form a lap joint between the first
3 portion and the second portion.

1 24. The computer system of claim 20 wherein the first portion and the second
2 portion of the fin are coupled together by friction stir welding to form at least one of
3 a lap joint and a butt joint between the first portion and the second portion.

1 25. The computer system of claim 20 further comprising a chassis, the integrated
2 circuit board being mounted in the chassis.

1 26. The computer system of claim 20 further comprising a memory coupled to
2 the processor.